

EXHIBIT 16

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**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE****PATENT APPLICATION**

Applicant(s): **Mark Dilman et al.**
Serial No.: **09/813,415**
Examiner: **Bilgrami, Asghar H.**
Filed: **March 21, 2001** Group Art Unit: **2143**
Confirmation #: **2405** Case: **1-6**
Title: **METHOD AND APPARATUS FOR EFFICIENT REACTIVE
MONITORING**

MAIL STOP Amendment
Commissioner for Patents
P.O. Box 1450
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5-2-07 Date	<i>Cantor</i> <i>C. W. H. S.</i>

S I R:

RESPONSE UNDER 37 C.F.R. §1.111

In response to the Office Action mailed February 8, 2007, please consider the above-identified patent application as follows.

In the event that an extension of time is required for this response to be considered timely, and a petition therefor does not otherwise accompany this response, any necessary extension of time is hereby petitioned for.

The Commissioner is authorized to charge any fees due, including extension of time and excess claim fees, to counsel's Deposit Account No. 20-0782/LCNT/Dilman 1.

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REMARKS

This response is intended as a full and complete response to the Office Action mailed February 8, 2007. In the Office Action, the Examiner notes that claims 1 and 6-14 are pending and rejected. By this response, Applicants have amended claims 1, 9, and 10. Claim 13 is hereby cancelled. No new matter has been added.

In view of both the foregoing amendments and the following remarks, Applicants submit that none of the claims now pending in the application are obvious under the provisions of 35 U.S.C. §103. Thus, Applicants believe that all of the claims are now in allowable form.

It is to be understood that Applicants, by amending the claims, do not acquiesce to the Examiner's characterizations of the art of record or to Applicants' subject matter recited in the pending claims. Further, Applicants are not acquiescing to the Examiner's statements as to the applicability of the art of record to the pending claims by filing the instant response including amendments.

OBJECTIONS

Claims 1, 7, 8, 9, 10 are objected to because of the following informalities: "Since the terms node and recourse are not clearly defined in the specification therefore one in the ordinary skill in the art cannot determine in light of the specification which term depends on the other or whether that are the same entity." Applicants respectfully disagree.

Applicants respectfully submit that the terms "node" and resource" are clear from Applicants' specification and drawings. Applicants' entire specification, and associated drawings, with the exception of the Summary of Invention section of Applicants' specification clearly distinguish between nodes (i.e., network elements) and resources of the nodes, where the usage of such resources is monitored at each of the nodes. Applicants have herein amended portions of Summary of Invention section of Applicants' specification to ensure consistency between use of the terms "node" and "resource" therein and use of the terms "node" and "resource" in the remainder of Applicants' specification and the associated drawings.

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Applicants respectfully submit that support for such amendments may clearly be found in Applicants' specification and drawings, as originally filed.

For example, Applicants' specification, with respect to Figure 1, states that "Fig. 1 is a block diagram illustrating a network of interconnected nodes, and a network management station arranged to monitor and control resource usage at the nodes...." Similarly, for example, Applicants' specification with respect to Figure 2, states that "Fig. 2 is a flow diagram of the resource utilization monitoring process performed at the nodes in Fig. 1, in a first embodiment of the invention which monitors the value of the resources...." In other words, nodes and resources are clearly defined.

Furthermore, the Detailed Description of Applicants' specification properly uses the terms "node" and "resource". For example, with respect to the description of Figure 1, Applicants' specification states that "Fig. 1 is a block diagram illustrating a network 100 of interconnected nodes 130-132 and 150-152, each of which has an assigned budget value. In a real embodiment, nodes 130-132 and 150-152 may be switches in an ATM network, some of which are connected to users such as user 101 through other networks, such as network 140 that contain other nodes, such as node 140. Other nodes, such as node 153 may be routers, bridges, or other similar network elements. Nodes can also be connected to a server 120 within a network 122 via a firewall 121. A network management station 160, connected to network 100 via node 132, is arranged to monitor and control resource usage at the other network nodes in accordance with principles of the present invention." (Specification, Pg. 7, Line 24 - Pg. 8, Line 1). In other words, nodes and resources are clearly defined.

Thus, for at least these reasons, and at least because of the portions of Applicants' specification reproduced herein, Applicants respectfully submit that the terms "node" and resource" are clear from Applicants' originally-filed specification and drawings. Furthermore, Applicants have herein amended the Summary of the Invention section of Applicants' specification to ensure consistency with the other portions of Applicants' specification, as well as the associated drawings.

Therefore, the objections should be withdrawn.

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REJECTIONS

35 U.S.C. §112

Claims 1, 7, 8, 9, 10

Claims 1, 7, 8, 9 and 10 are rejected under 35 U.S.C. §112, ¶1, as failing to comply with the enablement requirement. Specifically, the Examiner finds that "[t]he specification does not provide a clear description of a resource and a node. Additionally, the specification does not distinguish between nodes and resources. Since the terms node and resource are not clearly defined in the specification therefore one in the ordinary skill in the art cannot determine in light of the specification which term depends on the other or whether that are the same entity." Furthermore, with respect to claim 9, the Examiner further finds that "[t]he specification does not define the budget and the budget value." The Examiner further finds that "[t]he specification does not disclose how a global resource can be partitioned into a plurality of node resources." Applicants respectfully disagree.

With respect to the terms "node" and "resource", Applicants respectfully submit that the specification clearly distinguishes between nodes and resources for at least the reasons described hereinabove with respect to claims objections related to the terms "node" and "resource". As such, Applicants submit that claims 1, 7, 8, 9, and 10 each satisfy the requirements of 35 U.S.C. §112, ¶1, and are patentable thereunder.

With respect to the terms "budget" and "budget value", although Applicants believe that the terms "budget" and "budget value" are clearly defined in the Applicants' specification and associated drawings, Applicants have herein amended claim 9 to indicate that the term "budget" is a value threshold used for determining when the associated node should report to the management station, and the term "budget value" is a value indicative of the usage, or rate of change of usage, of a resource at the node to which that budget value is assigned. As such, Applicants submit that claim 9 satisfies the requirements of 35 U.S.C. §112, ¶1, and is patentable thereunder.

With respect to the limitation of partitioning a global resource into a plurality of node resources, although Applicants believe that the specification provides sufficient support for such limitation, Applicants have herein amended claims 9 and 10 to remove

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this limitation. As such, Applicants submit that claims 9 and 10 satisfy the requirements of 35 U.S.C. §112, ¶1, and are patentable thereunder.

Therefore, the rejections should be withdrawn.

35 U.S.C. §103

The Examiner has rejected claims 1, 6-14 under 35 U.S.C. §103(a) as being unpatentable over Mandal (U.S. Patent 6,170,009, hereinafter "Mandal") and Robinson et al. (U.S. Patent 6,570,867, hereinafter "Robinson"). Applicants respectfully traverse the rejection.

Claims 1, 7 and 8

Claims 1 and 7 recite the features of monitoring the rate of change of usage of resources at one or more nodes and reporting to a centralized management station of the network when the rate of change of the usage of the resources of one of the nodes exceeds a threshold. Mandal and Robinson, however, alone or in combination, fail to teach or suggest those features.

In general, Mandal teaches control of devices on a network using policies. Specifically, Mandal discloses a system that allows an operator to specify a policy for controlling a group of devices. (Mandal, Abstract). In general, Robinson discloses a network management framework for monitoring network-level concepts of routes and paths. As disclosed in Robinson, a route and path management system includes a data collector for collecting data from individual network elements, a management server for processing the collected data into manageable route and path objects, and a graphical user interface for allowing a user to manage and monitor routes and paths. (Robinson, Abstract).

Mandal and Robinson, however, alone or in combination, for at least the reasons described in Applicants' response of December 22, 2006 to the Office Action dated September 26, 2006, fail to teach or suggest at least the features of monitoring the rate of change of usage of resources at one or more nodes and reporting to a centralized

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management station of the network when the rate of change of the usage of the resources of one of the nodes exceeds a threshold.

Furthermore, in the Office Action, the Examiner asserts that "Mandal describes a policy in which a network management system should allow no more than 30% of total bandwidth for video. Therefore in order to implement such policy it has to monitor at periodic times (col. 6, lines 1-27) the rate of change of a parameter against a certain threshold, which is 30% in this example (please read col. 3, lines 45-67)." (Office Action, Pg. 9). Applicants respectfully disagree.

Applicants respectfully maintain that Mandal does not teach a rate of change. Rather, Mandal teaches a policy in which a value of the percentage of bandwidth used for video, measured at a specific time, is compared against the 30% threshold. For example, at time t_1 , the percentage of bandwidth which is used for video is 28%, which is less than the threshold of 30%. This simply does not teach or suggest a rate at which the percentage of bandwidth used for video changes. For example, a value of 28% at a specific point in time does not teach or suggest that the percentage of bandwidth used for video has changed at a rate of, for example, 3% per hour.

In other words, as taught in Mandal, the value is an instantaneous value, measured at a fixed point in time, that is compared against the threshold value. An instantaneous value measured at a fixed point in time, as taught in Mandal, is simply not a rate of change, as claimed in Applicants' claim 1. A rate is clearly measured using a time interval, or some other interval by which rate may be measured. There is no time interval in Mandal. Mandal is devoid of any teaching or suggestion of monitoring any rate. As such, since Mandal fails to teach or suggest a rate of change, Mandal must also fail to teach or suggest a rate of change of usage of a resource, as claimed in Applicants' claim 1.

Thus, since Mandal and Robinson each fail to teach or suggest a rate of change of the usage of resources, any permissible combination of Mandal and Robinson must also fail to teach or suggest a rate of change of the usage of resources. Thus, Mandal and Robinson, alone or in combination, fail to teach or suggest Applicants' claim 1, as a whole.

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Therefore, independent claim 1 is patentable over Mandal and Robinson and, thus, fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Similarly, independent claims 7 and 8 recite features similar to the features of claim 1. Namely, independent claims 7 and 8 also include the feature of a rate of change of the usage of resources. As such, for at least the same reasons discussed herein with respect to claim 1, independent claims 7 and 8 also are patentable over Mandal and Robinson and, thus, fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Claim 9

As described herein, Mandal teaches control of devices on a network using policies where each policy is automatically translated into lower-level device-specific commands which are sent to the devices across the network, and Robinson teaches a route and path management system including a data collector for collecting data from individual network elements, a management server for processing the collected data into manageable route and path objects, and a graphical user interface for allowing a user to manage and monitor routes and paths.

Mandal and Robinson, however, alone or in combination, fail to teach or suggest Applicants' claim 9, as a whole. Namely, Mandal and Robinson, alone or in combination, fail to teach or suggest at least the limitation of "initiating a poll, by the management station, of node resource usage by the nodes of the network in response to a determination that a sum of previously reported values indicative of node resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold," as claimed in Applicants' claim 9.

With respect to polling, Mandal merely states that network devices may be polled periodically. More specifically, Mandal states that a topology service "maintains status information for the active devices coupled to the network by either periodically polling devices on network 108, or by merely listening to traffic on network 108 to determine which devices are responding to commands...." (Mandal, Col. 6, Lines 9-13). Mandal, however, is devoid of any teaching or suggestion of initiating a poll of network nodes in response to any determination that sum of previously reported values indicative of node

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resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold, as claimed in Applicants' claim 9.

Furthermore, Robinson fails to bridge the substantial gap between Mandal and Applicants' claim 9.

In general, Robinson describes the use of polling to perform path discovery, and polling network objects in an object queue to obtain performance data. Specifically, Robinson describes "polling each network object listed in the object queue 68 (new and old) through the data collector 21 to obtain performance data for each of the objects listed. The object performance logic 69 then forwards the polled responses obtained to the notification channel for notification to the GUI 23." (Robinson, Col. 12, Lines 20-23). Robinson, however, fails to teach or suggest at least the limitation of "initiating a poll, by the management station, of node resource usage by the nodes of the network in response to a determination that a sum of previously reported values indicative of node resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold," as claimed in Applicants' claim 9.

In the Office Action, the Examiner cites specific portions of Robinson (Col. 2, Lines 60-67; Col. 3, Lines 1-33; Col. 5, Lines 3-12; Col. 12, Lines 26-44; and Col. 13, Lines 46-58), asserting that the cited portions of Robinson teach Applicants' limitation of "initiating a poll, by the management station, of node resource usage by the nodes of the network in response to a determination that a sum of previously reported budget values received from reporting nodes plus an upper bound of budget values for non-reporting nodes exceeds a threshold," as claimed in Applicants' claim 9. The cited portions of Robinson, however, fail to teach or suggest this limitation, or Applicants' amended limitation of "initiating a poll, by the management station, of node resource usage by the nodes of the network in response to a determination that a sum of previously reported values indicative of node resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold," as claimed in Applicants' claim 9.

Rather, the cited portions of Robinson merely disclose various other teachings. With respect to the portions of Robinson cited by the Examiner, Col. 2, Lines 60-67 of Robinson merely includes general statements indicating that routes and paths in a

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network provide managers with capabilities including troubleshooting, performance monitoring service level planning, and path provisioning. Similarly, for example, Col. 3, Lines 1-33 of Robinson merely includes general statements describing the advantages of using a data collector for collecting routing information from individual network devices versus device level management applications. Furthermore, Col. 3, Lines 1-33 of Robinson describes functions supported by the system of Robinson, such as real-time monitoring and reporting of device-level performance, storing and providing route history and path-level performance history, and raising and clearing of QoS alarms. Moreover, Col. 5, Lines 3-12 of Robinson merely includes general statements regarding the configuration of an IP network.

In other words, these portions of Robinson described above are completely devoid of any teaching or suggestion of initiating a poll of node resource usage by the nodes of the network in response to a determination that a sum of previously reported values indicative of node resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold, as claimed in Applicants' claim 9. These portions of Robinson are devoid of any teaching or suggestion of any sums, previously reported values, values indicative of node resource usage, upper bounds, reporting and non-reporting nodes, or any of the other features of Applicants' limitation.

Furthermore, with respect to other portions of Robinson cited by the Examiner, Col. 12, Lines 26-44 and Col. 13, Lines 46-58, Robinson merely describes simple calculations and comparisons that are completely devoid of any teaching or suggestion of previously reported values indicative of node resource usage received from reporting nodes, an upper bound of node resource usage for non-reporting nodes, a sum of previously reported values indicative of node resource usage received from reporting nodes and an upper bound of node resource usage for non-reporting nodes, or a determination that such a sum exceeds a threshold.

More specifically, with respect to Col. 12, Lines 26-44, Robinson states that objects polled are compared to threshold data contained in a path queue and performance of each path listed therein is calculated. The comparison of polled objects to threshold data and calculation of path performance, as taught in Robinson, simply

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does not teach or suggest the sum claimed in Applicants' claim 9. Furthermore, in the cited section of Robinson, Robinson describes forwarding of paths for which performance was calculated to route performance logic, which compares the obtained paths with old identification data in the route queue. The comparison of paths with information in a path queue, as taught in Robinson, simply does not teach or suggest the sum claimed in Applicants' claim 9. As such, the cited portion of Robinson clearly fails to teach or suggest at least the limitation of "initiating a poll, by the management station, of node resource usage by the nodes of the network in response to a determination that a sum of previously reported values indicative of node resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold," as claimed in Applicants' claim 9.

Furthermore, with respect to Col. 13, Lines 46-58, Robinson states that performance of a specified route, and each of the associated paths and objects, is measured against appropriate performance thresholds located in the threshold crossing logic. The performance of a route, path, or object, as taught in Robinson, simply does not teach or suggest the sum claimed in Applicants' claim 9. Furthermore, in the cited section of Robinson, Robinson further states that once threshold calculations are completed, the historical performance monitoring process is repeated to obtain new performance values which are permanently stored and checked against threshold levels. In other words, Robinson merely includes general statements about threshold calculations, historical performance monitoring, and comparison of performance values against thresholds. Such general statements of Robinson simply do not teach or suggest the sum claimed in Applicants' claim 9. As such, the cited portion of Robinson clearly fails to teach or suggest at least the limitation of "initiating a poll, by the management station, of node resource usage by the nodes of the network in response to a determination that a sum of previously reported values indicative of node resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold," as claimed in Applicants' claim 9.

Thus, since Mandal and Robinson each fail to teach or suggest "initiating a poll, by the management station, of node resource usage by the nodes of the network in response to a determination that a sum of previously reported values indicative of node

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resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold," any permissible combination of Mandal and Robinson must also fail to teach or suggest "initiating a poll, by the management station, of node resource usage by the nodes of the network in response to a determination that a sum of previously reported values indicative of node resource usage received from reporting nodes plus an upper bound of node resource usage for non-reporting nodes exceeds a threshold." Thus, Mandal and Robinson, alone or in combination, fail to teach or suggest Applicants' claim 9, as a whole.

As such, independent claim 9 fully satisfies the requirements of 35 U.S.C. §103 and is patentable over Mandal and Robinson. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Claim 10

As described herein, Mandal teaches control of devices on a network using policies where each policy is automatically translated into lower-level device-specific commands which are sent to the devices across the network, and Robinson teaches a route and path management system including a data collector for collecting data from individual network elements, a management server for processing the collected data into manageable route and path objects, and a graphical user interface for allowing a user to manage and monitor routes and paths.

Mandal and Robinson, however, alone or in combination, fail to teach or suggest Applicants' claim 10, as a whole. Namely, as described herein with respect to claims 1 and 7, Mandal and Robinson, alone or in combination, fail teach or suggest a rate of usage of a node resource, as claimed in Applicants' claim 10. As such, for at least this reason, Applicants' claim 10 is patentable over Mandal and Robinson under 35 U.S.C. §103.

Furthermore, in the Office Action, the Examiner appears to have failed to provide any argument with respect to Applicants' limitation of "wherein said rate of change of usage of said node resource is determined using a variable time interval." As such, Applicants respectfully submit that Mandal and Robinson, alone or in combination, also

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fail to teach or suggest a rate of change of usage of a node resource that is determined using a variable time interval, as claimed in Applicants' claim 10.

Moreover, Mandal and Robinson, alone or in combination, and for at least the reasons stated hereinabove, fail to teach or suggest at least the limitation of "reporting to a management station of the network when a rate of change of usage of said node resource exceeds the local threshold as determined using local monitoring of the node resource, wherein said rate of change of usage of said node resource is determined using a variable time interval comprising a difference between a current time and a time at which the node was last polled by the management station," as claimed in Applicants' claim 10.

Mandal is devoid of any teaching or suggestion of reporting by a network node to a management system. Rather, Mandal describes a management system that performs periodic polling of network devices, and which may listen to traffic on the network in order to determine which devices are responding to commands. (Mandal, Col. 6, Lines 9-13). Furthermore, even if Mandal did teach reporting by a network node to a management system, Mandal still fails to teach or suggest any rate that is determined using a variable time interval, much less that a rate of usage of a resource is determined using a variable time interval or that the time interval comprises a difference between a current time and a time at which the node was last polled by the management station, as claimed in Applicants' claim 10.

Furthermore, with respect to reporting by a network node to a management system, Robinson merely states that traps may be generated by network elements and reported to the management system. Specifically, Robinson states that "[t]raps generated by network elements 24 are received into the management server 22 through a trap gatherer 61 which is preferably implemented in the data collector 21. The trap gatherer 61 forwards each trap received to a trap handler 62 which is internal to the management server 22." (Robinson, Col. 9, Lines 60-64). Robinson, however, is devoid of any teaching or suggestion of any details of what triggers the traps to be sent, other than a general statement that traps are generated for significant events that occur between polling intervals.

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Robinson fails to teach or suggest reporting to a management station of the network when a rate exceeds a threshold, much less reporting to a management station of the network when a rate of usage of a node resource exceeds a threshold, as claimed in Applicants' claim 10. Furthermore, even if Robinson did teach reporting to a management station of the network when a rate exceeds a threshold, Robinson is devoid of any teaching or suggestion of determining any rate, much less determining a rate using a variable time interval or that the variable time interval comprises a difference between a current time and a time at which the node was last polled by the management station.

As such, Robinson fails to teach or suggest "reporting to a management station of the network when a rate of change of usage of said node resource exceeds the local threshold as determined using local monitoring of the node resource, wherein said rate of change of usage of said node resource is determined using a variable time interval comprising a difference between a current time and a time at which the node was last polled by the management station," as claimed in Applicants' claim 10.

Thus, since Mandal and Robinson each fail to teach or suggest "reporting to a management station of the network when a rate of change of usage of said node resource exceeds the local threshold as determined using local monitoring of the node resource, wherein said rate of change of usage of said node resource is determined using a variable time interval comprising a difference between a current time and a time at which the node was last polled by the management station," any permissible combination of Mandal and Robinson must also fail to teach or suggest "reporting to a management station of the network when a rate of change of usage of said node resource exceeds the local threshold as determined using local monitoring of the node resource, wherein said rate of change of usage of said node resource is determined using a variable time interval comprising a difference between a current time and a time at which the node was last polled by the management station." Thus, Mandal and Robinson, alone or in combination, fail to teach or suggest Applicants' claim 10, as a whole.

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As such, independent claim 10 fully satisfies the requirements of 35 U.S.C. §103 and is patentable over Mandal and Robinson. Accordingly, Applicants respectfully request that the rejection be withdrawn.

Claims 6 and 11-24

Claims 6 and 11-14 depend, either directly or indirectly, from independent claims 1, 7, and 8, and recite additional limitations therefor. Therefore, dependent claims 6 and 11-14 also are not obvious over Mandal in view of Robinson, and, thus, fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder.

Accordingly, Applicants respectfully request that the rejection be withdrawn.

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CONCLUSION

Thus, Applicants submit that all of the claims presently in the application are non-obvious and are patentable under the provisions of 35 U.S.C. §103. Further, all claims satisfy the requirements of 35 U.S.C. §112. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Michael Bentley or Eamon J. Wall at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

Dated: 5/1/07



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